CLAIMS

1. A method of designing a transport network, for routing a plurality of routable flows, having a plurality of network elements and a plurality of connections between said network elements, the method comprising:

a) defining (4) a first network configuration and at least one alternative network configuration for said transport network;

b) calculating (6), for each of said first and any alternative network configuration, a probability function (P(n)) representing, for each maximum number (n) of routable flows, the probability of routing such a number (n) of flows in the network configuration currently considered;

c) calculating (8), for each of said first and any alternative network configuration, a complexity function ($C_i(n)$) calculated as the ratio between a sum of complexity factors relative to the network elements of the network configuration currently considered and said probability function (P(n));

d) comparing (10) the complexity functions ($C_i(n)$) of said first and any alternative network configurations, for choosing a network configuration having a lowest complexity value.

2. A method as claimed in claim 1, wherein said probability function (P(n)) is calculated as the ratio between the number of times that a maximum number (n) of routable flows has been successfully routed, by means of a test routine (20) repeated a predetermined number of times (m), and the number of times (m) said test routine has been repeated.

3. A method as claimed in claim 2, wherein said test routine (20) comprises:

g) generating a first random number (22) representing a first network element;

h) generating a second random number (24), different from said first random number (22), representing a second network element;

i) searching a free path between said first network element and said second network element and, in case said free path has been found, increasing a counter (n_OK) of maximum routable flows and marking said path as a routed flow;

j) repeating steps g) to i) until no one free path can be found for routing a new flow.

4. A method as claimed in claim 3, wherein first (22) and second (24) random number are weighted random numbers, in order to simulate a polarized traffic demand in the network.

5. A method as claimed in claim 3, wherein said step of searching a free path provides for searching initially a shortest path between said first and second network elements, for successively searching a longer path if said shortest path has not been found.

6. A method as claimed in claim 1, wherein said step of comparing the complexity functions ($C_i(n)$) is performed calculating said complexity function ($C_i(n)$), for each network configuration considered, in correspondence of an estimated maximum number (n) of routable flows in said transport network.

7. A method as claimed in claim 1 or 6, wherein the complexity factor of a network element is proportional to the cost of the same network element, and said complexity function ($C_i(n)$) represents a unit-cost-per-flow function.

8. A computer program comprising computer program code means adapted to perform all the steps of any of claims 1 to 7 when said program is run on a computer.

9. A computer program as claimed in claim 8 embodied on a computer readable medium.

10. A device for designing a transport network having a plurality of network elements and a plurality of connections between said network elements, characterized in that it comprises:

- a network configuration unit (4), for defining a first network configuration and at least one alternative network configuration for said transport network;

- a probability evaluation unit (6), for calculating, for each of said first and any alternative network configuration, a probability function (P(n)) representing, for each maximum number (n) of routable flows, the probability of routing such a number (n) of flows in the network configuration currently considered;

- a complexity evaluation unit (8), for calculating, for each of said first and any alternative network configuration, a complexity function (C_i(n)) calculated as the ratio between a sum of complexity factors relative to the network elements of the network configuration currently considered and said probability function (P(n));

- a comparison unit (10), for comparing the complexity functions (C_i(n)) of said first and any alternative network configurations, for choosing a network configuration having a lowest complexity value.

11. A device as claimed in claim 10, wherein said probability evaluation unit (6) calculates said probability function (P(n)) as the ratio between the number of times that a maximum number (n) of routable flows has been successfully routed, by means of a test routine repeated a predetermined number of times (m), and the number of times (m) said test routine has been repeated.

12. A device as claimed in claim 11, wherein said test routine (20) comprises:

g) generating a first random number (22) representing a first network element;

h) generating a second random number (24), different from said first random number (22), representing a second network element;

i) searching a free path between said first network element and said second network element and, in case said free path has been found, increasing a counter (n_OK) of maximum routable flows and marking said path as a routed flow;

j) repeating steps g) to i) until no one free path can be found for routing a new flow.

13. A device as claimed in claim 12, wherein said step of searching a free path provides for searching initially a shortest path between said first and second network elements, for successively searching a longer path if said shortest path has not been found.

14. A device as claimed in claim 10, wherein said comparison unit (10) compares the complexity functions ($C_i(n)$) by calculating said complexity function ($C_i(n)$), for each network configuration considered, in correspondence of an estimated maximum number (n) of routable flows in said transport network.

15. A device as claimed in claim 10 or 14, wherein the complexity factor of a network element is proportional to the cost of the same network element, and said complexity function ($C_i(n)$) represents a unit-cost-per-flow function.